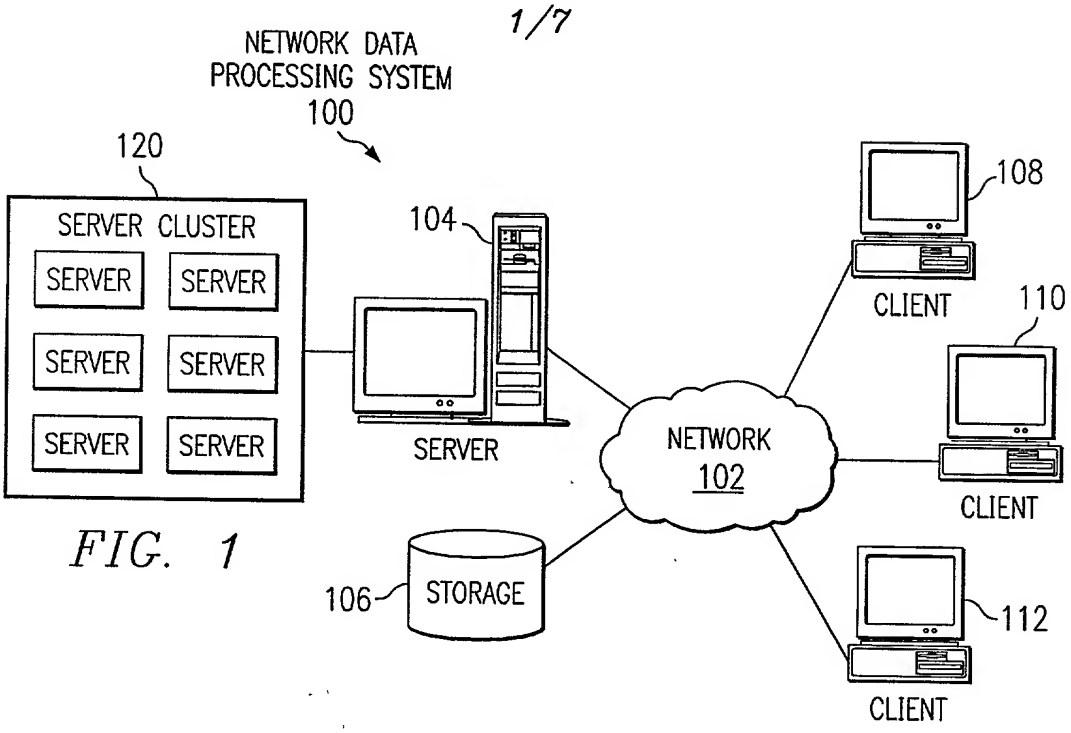

NETWORK DATA
PROCESSING SYSTEM
100
120
SERVER CLUSTER
SERVER
SERVER
SERVER
SERVER
SERVER
SERVER
104
SERVER
108
CLIENT
110
CLIENT
NETWORK
102
106
STORAGE
112
CLIENT

FIG. 1

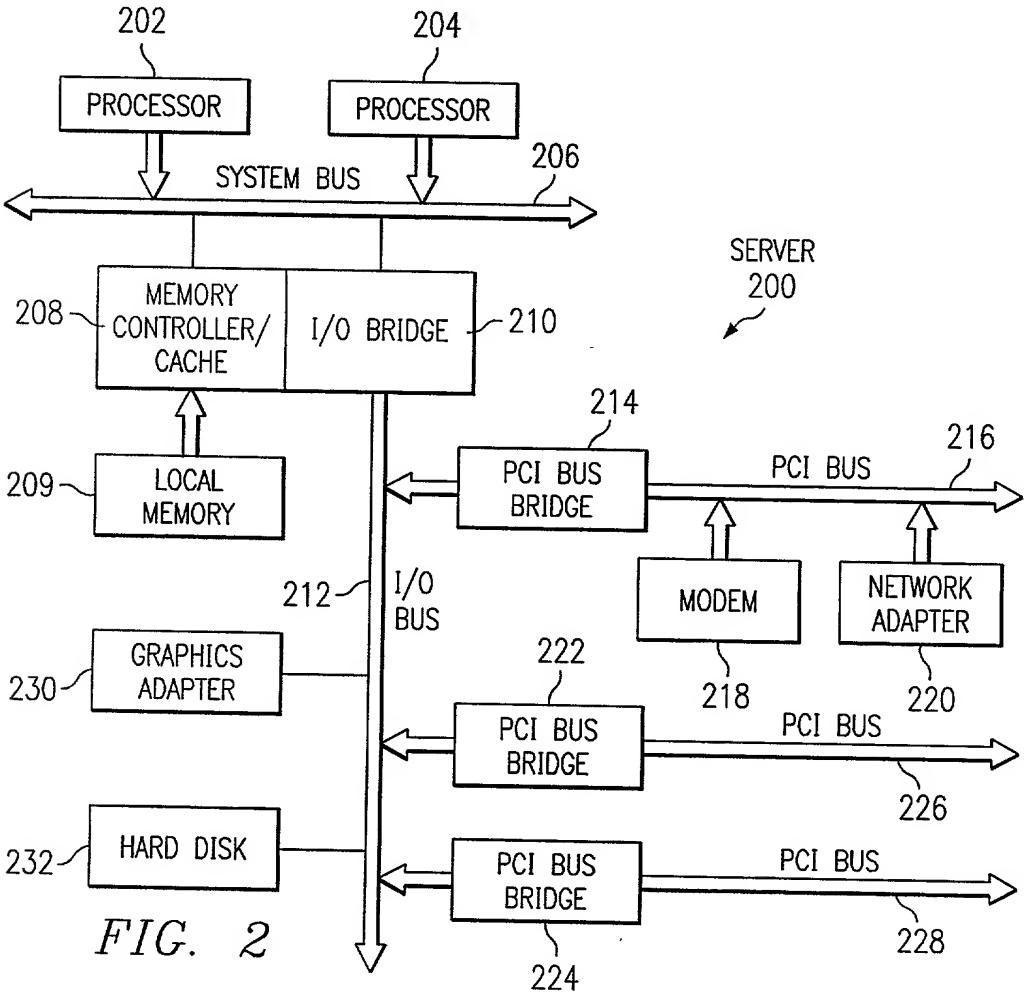
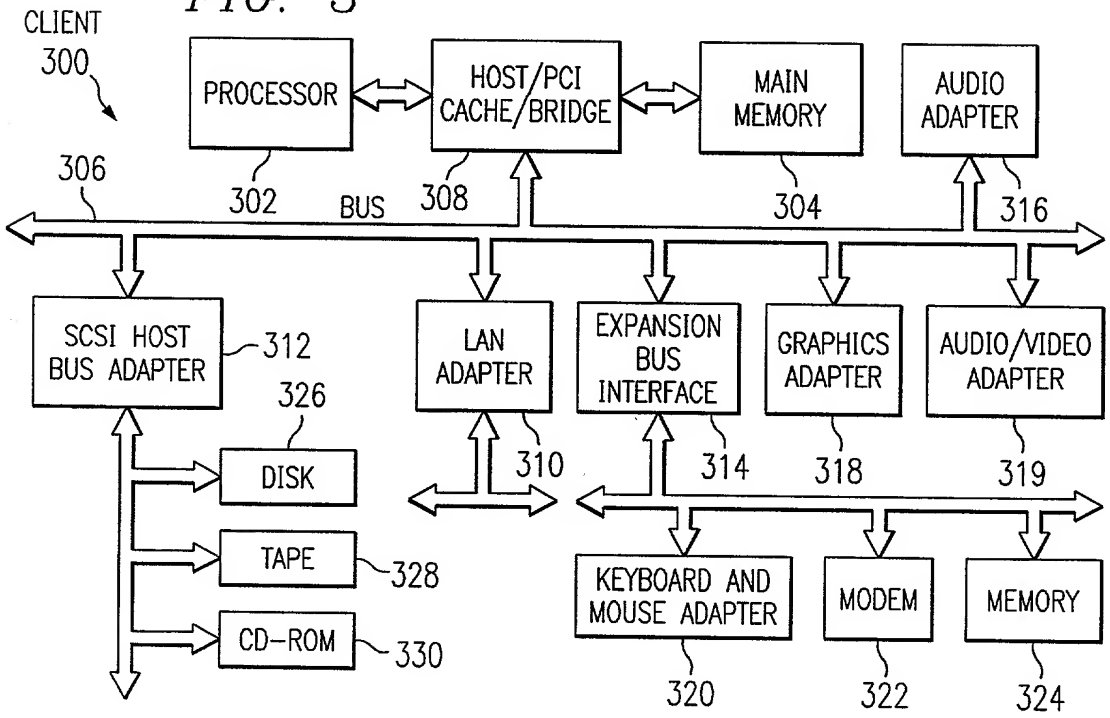

202
PROCESSOR
204
PROCESSOR
206
SYSTEM BUS
SERVER
200
208
MEMORY
CONTROLLER/
CACHE
I/O BRIDGE
210
214
209
LOCAL
MEMORY
PCI BUS
BRIDGE
PCI BUS
216
212
I/O
BUS
MODEM
NETWORK
ADAPTER
222
230
GRAPHICS
ADAPTER
218
220
PCI BUS
BRIDGE
PCI BUS
226
232
HARD DISK
PCI BUS
BRIDGE
PCI BUS
228
224

FIG. 2

FIG. 3


CLIENT
300
PROCESSOR
HOST/PCI
CACHE/BRIDGE
MAIN
MEMORY
AUDIO
ADAPTER
306
302
BUS
308
304
316
SCSI HOST
BUS ADAPTER
312
326
LAN
ADAPTER
EXPANSION
BUS
INTERFACE
GRAPHICS
ADAPTER
AUDIO/VIDEO
ADAPTER
DISK
310
314
318
319
TAPE
328
CD-ROM
330
KEYBOARD AND
MOUSE ADAPTER
MODEM
MEMORY
320
322
324

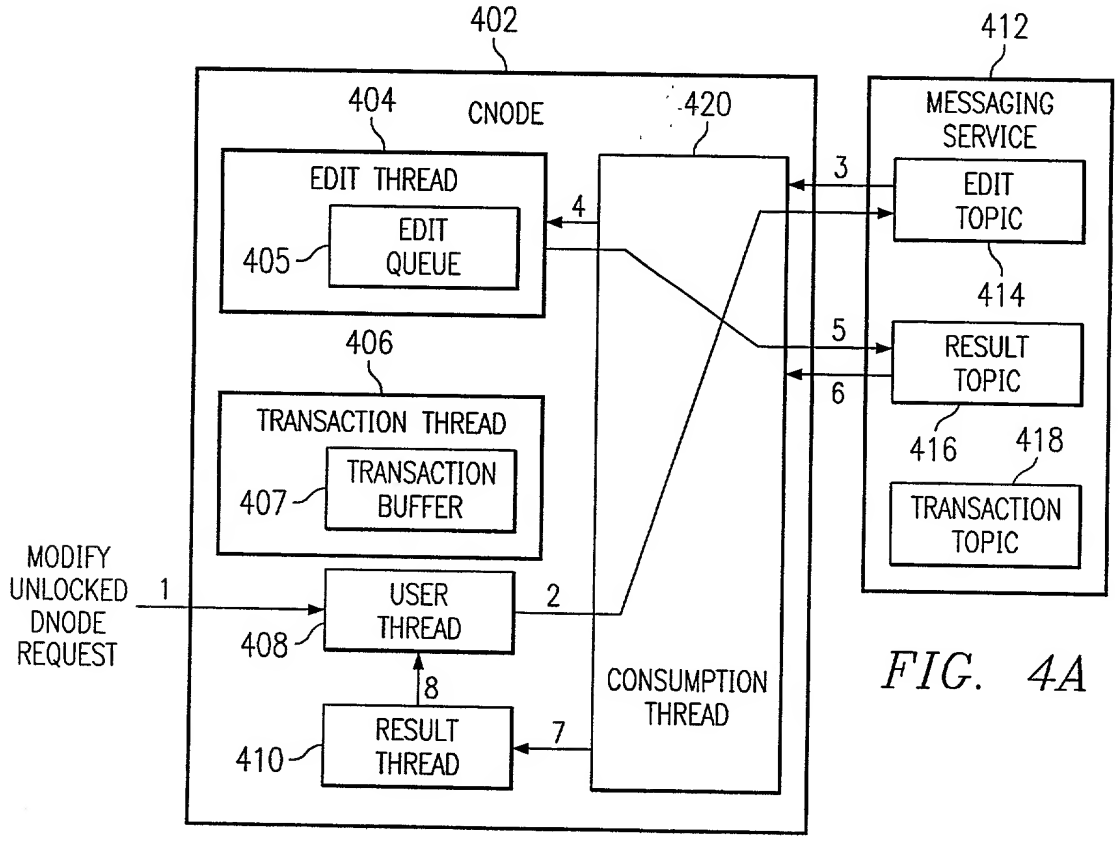

402
412
404
CNODE
420
MESSAGING
SERVICE
EDIT THREAD
EDIT
QUEUE
405
4
3
EDIT
TOPIC
414
406
5
RESULT
TOPIC
6
TRANSACTION THREAD
TRANSACTION
BUFFER
407
416
418
TRANSACTION
TOPIC
MODIFY
UNLOCKED
DNODE
REQUEST
1
USER
THREAD
2
408
8
CONSUMPTION
THREAD
RESULT
THREAD
7
410

FIG. 4A

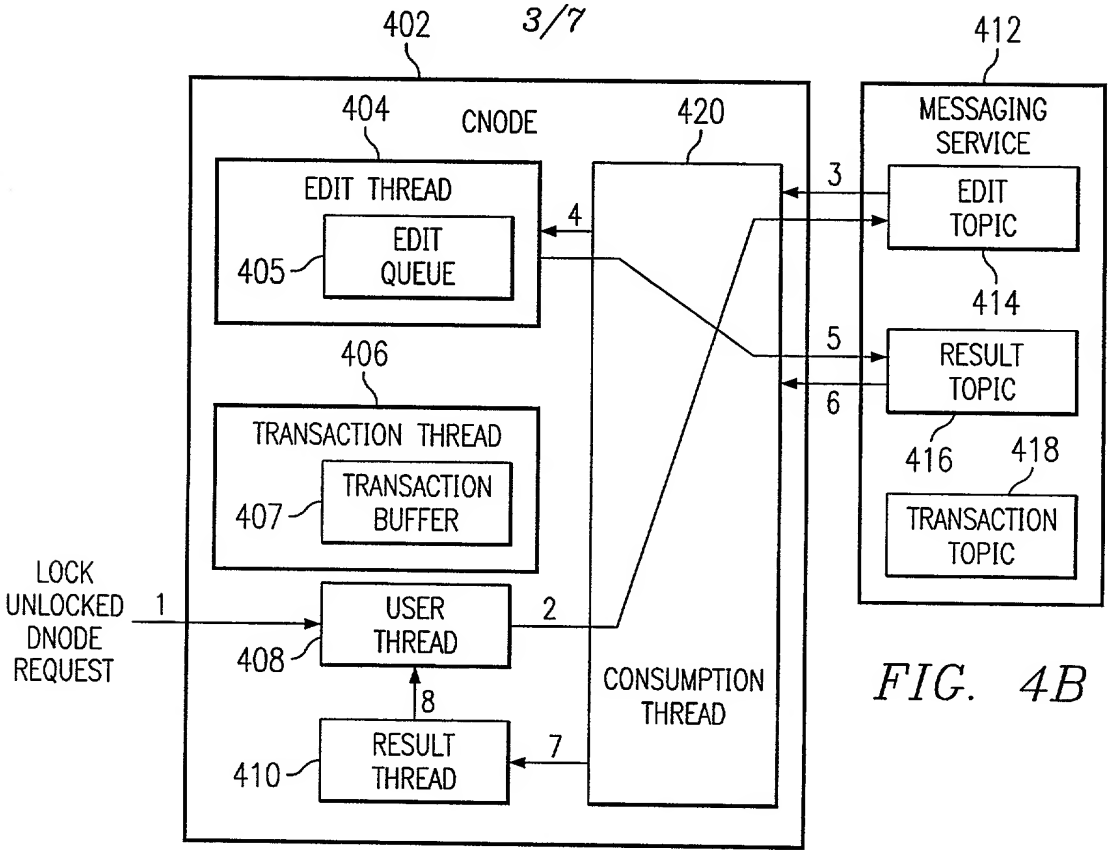

402
412
404
CNODE
420
MESSAGING SERVICE
EDIT THREAD
EDIT QUEUE
405
EDIT TOPIC
414
406
RESULT TOPIC
TRANSACTION THREAD
TRANSACTION BUFFER
407
416
418
TRANSACTION TOPIC
LOCK UNLOCKED DNODE REQUEST
1
USER THREAD
408
2
3
4
5
6
7
8
RESULT THREAD
410
CONSUMPTION THREAD

FIG. 4B

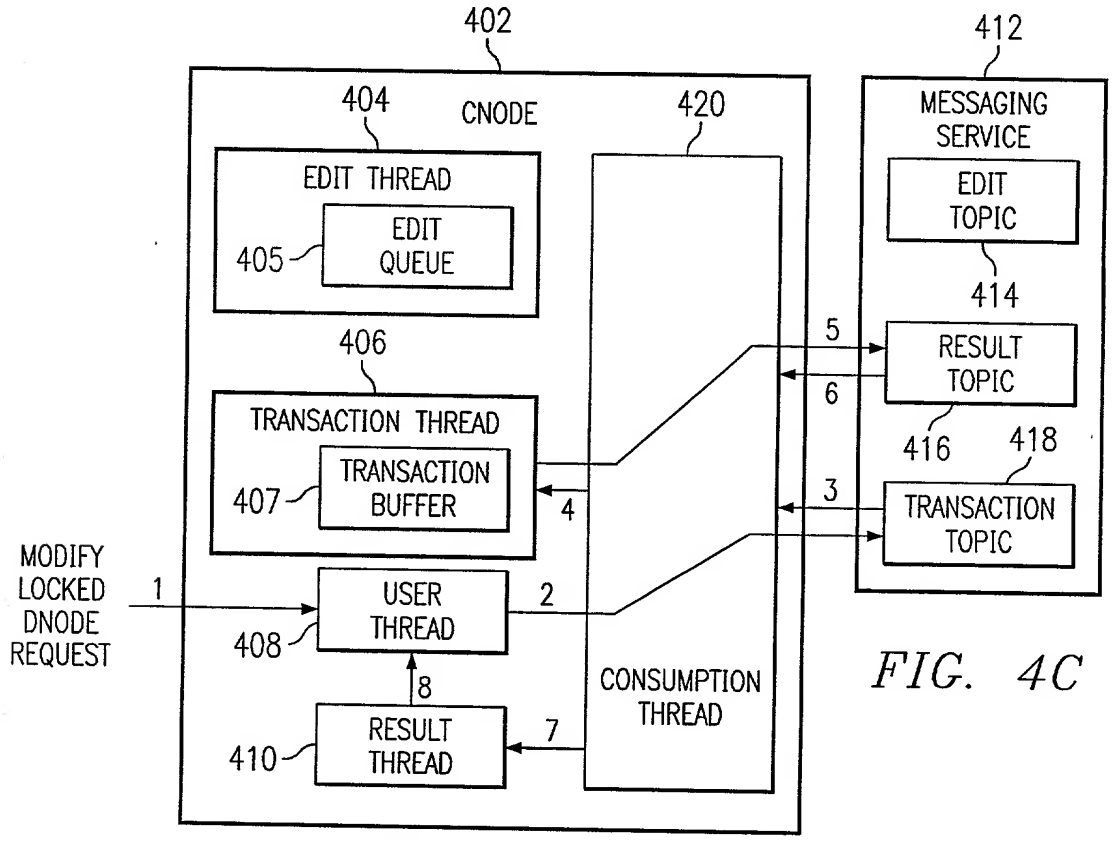

402
412
404
CNODE
420
MESSAGING SERVICE
EDIT THREAD
EDIT QUEUE
405
EDIT TOPIC
414
406
RESULT TOPIC
TRANSACTION THREAD
TRANSACTION BUFFER
407
416
418
TRANSACTION TOPIC
MODIFY LOCKED DNODE REQUEST
1
USER THREAD
408
2
3
4
5
6
7
8
RESULT THREAD
410
CONSUMPTION THREAD

FIG. 4C

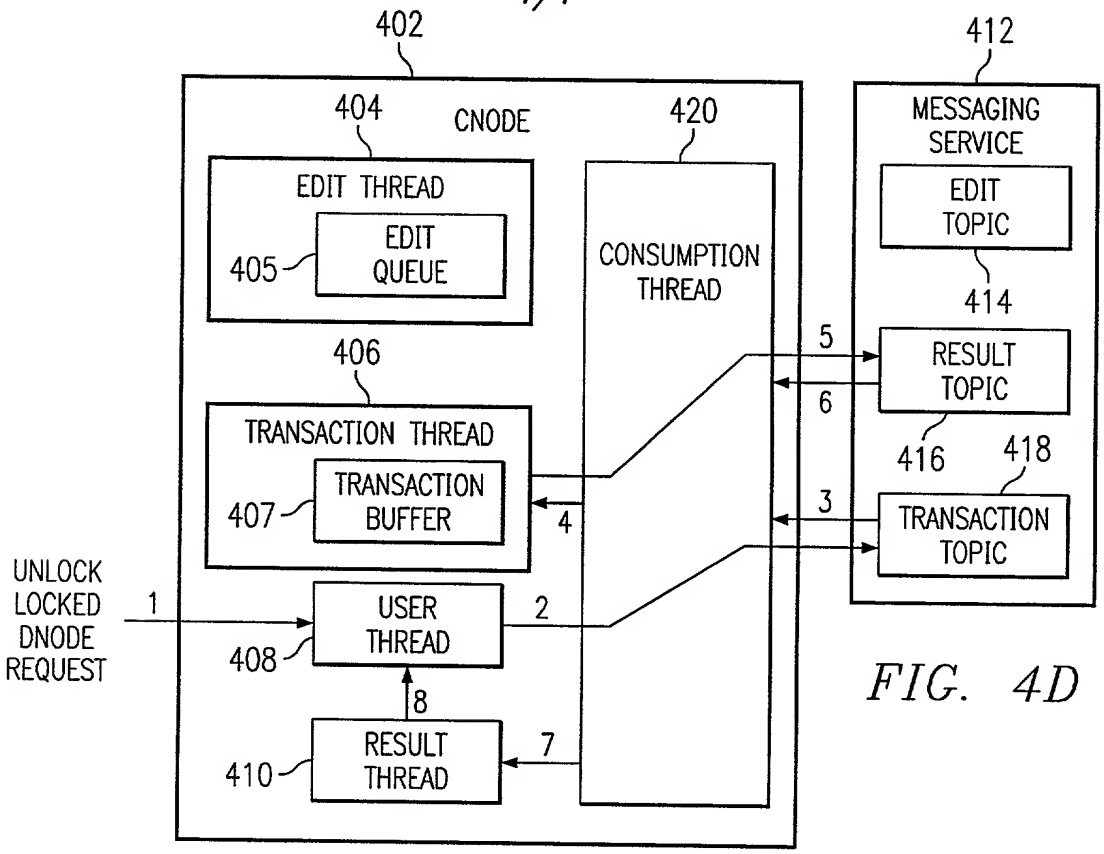

402
412
404
CNODE
420
MESSAGING SERVICE
EDIT THREAD
EDIT TOPIC
405
EDIT QUEUE
CONSUMPTION THREAD
414
406
5
RESULT TOPIC
6
TRANSACTION THREAD
416
418
407
TRANSACTION BUFFER
4
3
TRANSACTION TOPIC
UNLOCK LOCKED DNODE REQUEST
1
USER THREAD
2
408
8
410
RESULT THREAD
7

FIG. 4D

FIG. 6

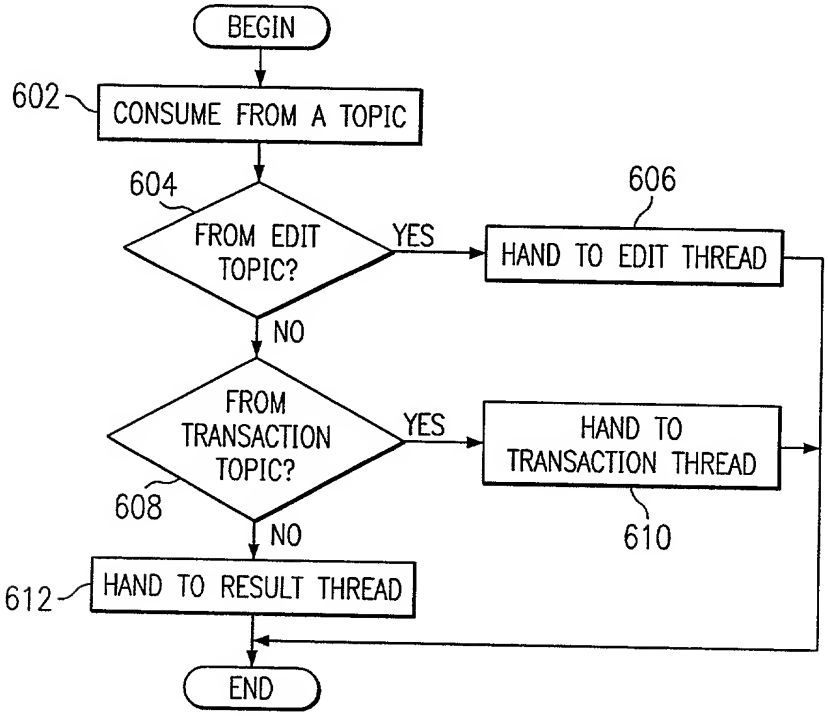
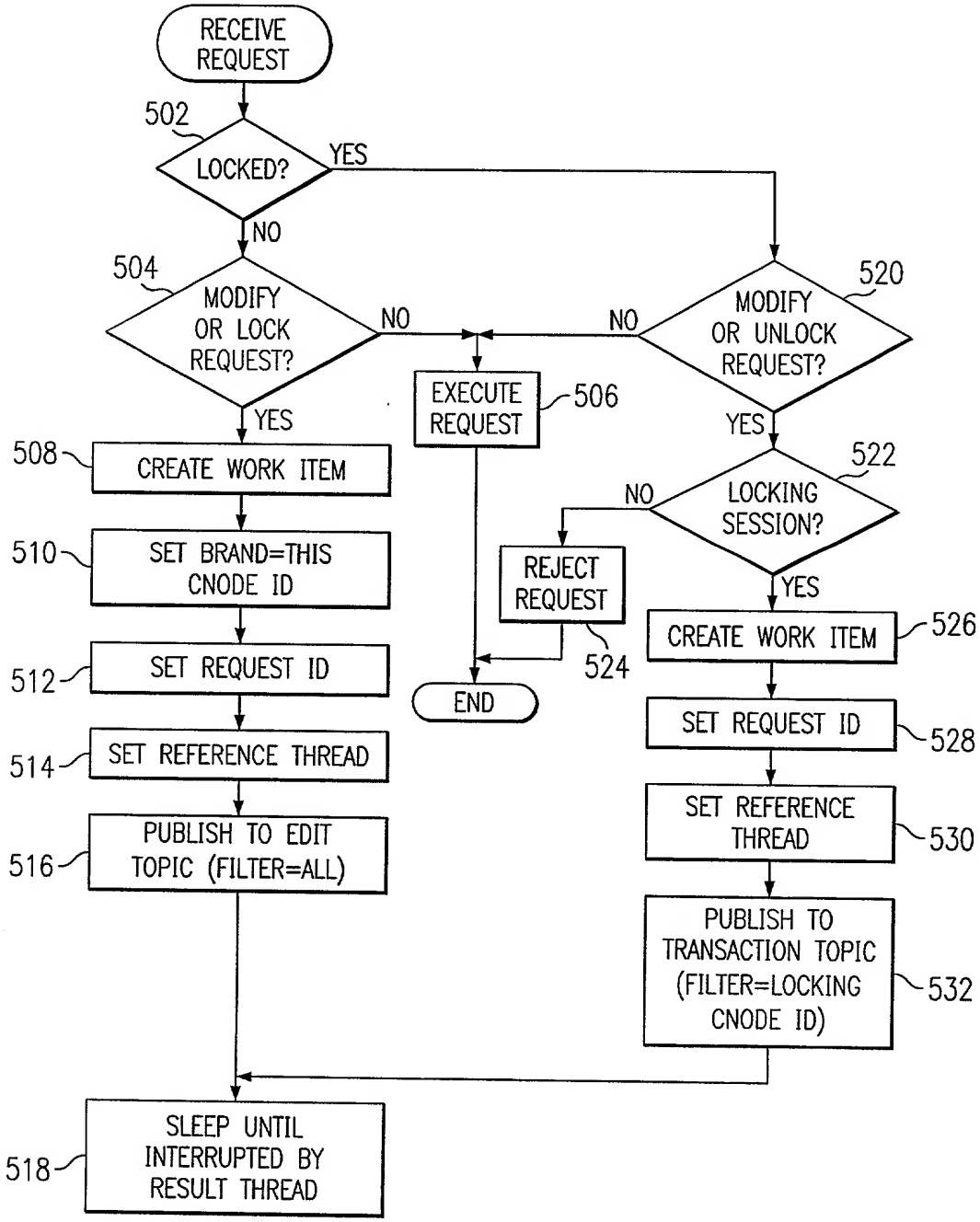

BEGIN
602
CONSUME FROM A TOPIC
604
FROM EDIT TOPIC?
YES
606
HAND TO EDIT THREAD
NO
FROM TRANSACTION TOPIC?
YES
HAND TO TRANSACTION THREAD
608
610
NO
612
HAND TO RESULT THREAD
END

FIG. 5


RECEIVE REQUEST
502
LOCKED?
YES
NO
504
MODIFY OR LOCK REQUEST?
NO
YES
EXECUTE REQUEST
506
END
508
CREATE WORK ITEM
510
SET BRAND=THIS CNODE ID
512
SET REQUEST ID
514
SET REFERENCE THREAD
516
PUBLISH TO EDIT TOPIC (FILTER=ALL)
518
SLEEP UNTIL INTERRUPTED BY RESULT THREAD
520
MODIFY OR UNLOCK REQUEST?
NO
YES
522
LOCKING SESSION?
NO
REJECT REQUEST
524
YES
526
CREATE WORK ITEM
528
SET REQUEST ID
530
SET REFERENCE THREAD
532
PUBLISH TO TRANSACTION TOPIC (FILTER=LOCKING CNODE ID)

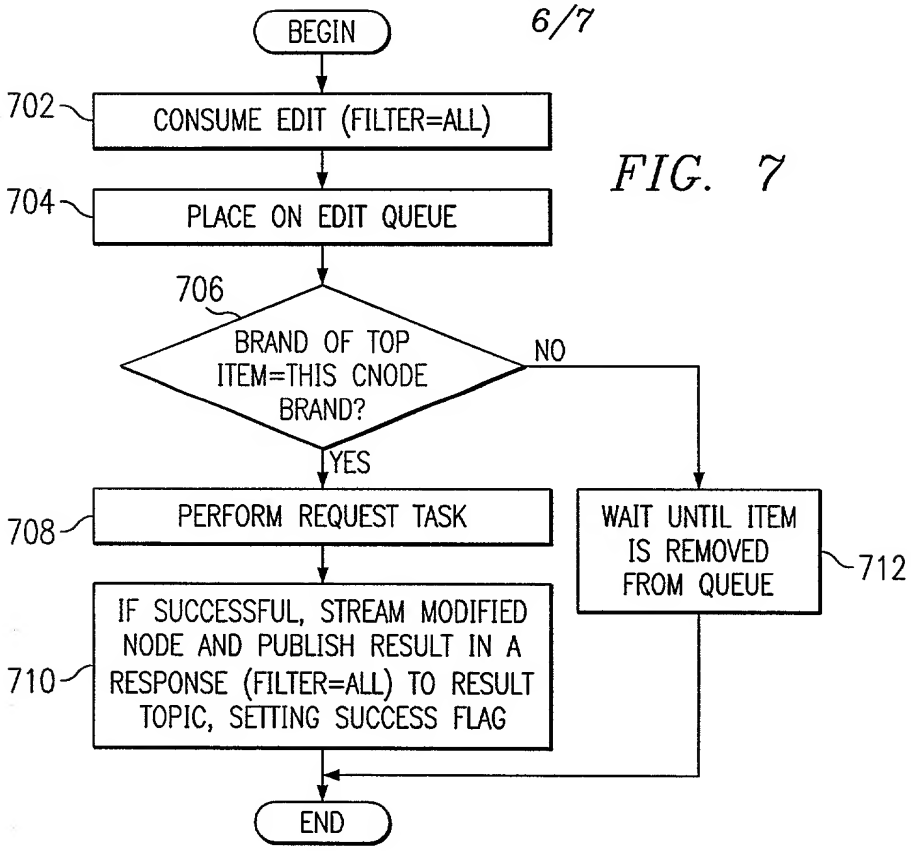

BEGIN
702
CONSUME EDIT (FILTER=ALL)
704
PLACE ON EDIT QUEUE
706
BRAND OF TOP ITEM=THIS CNODE BRAND?
NO
YES
708
PERFORM REQUEST TASK
710
IF SUCCESSFUL, STREAM MODIFIED NODE AND PUBLISH RESULT IN A RESPONSE (FILTER=ALL) TO RESULT TOPIC, SETTING SUCCESS FLAG
WAIT UNTIL ITEM IS REMOVED FROM QUEUE
712
END

FIG. 7

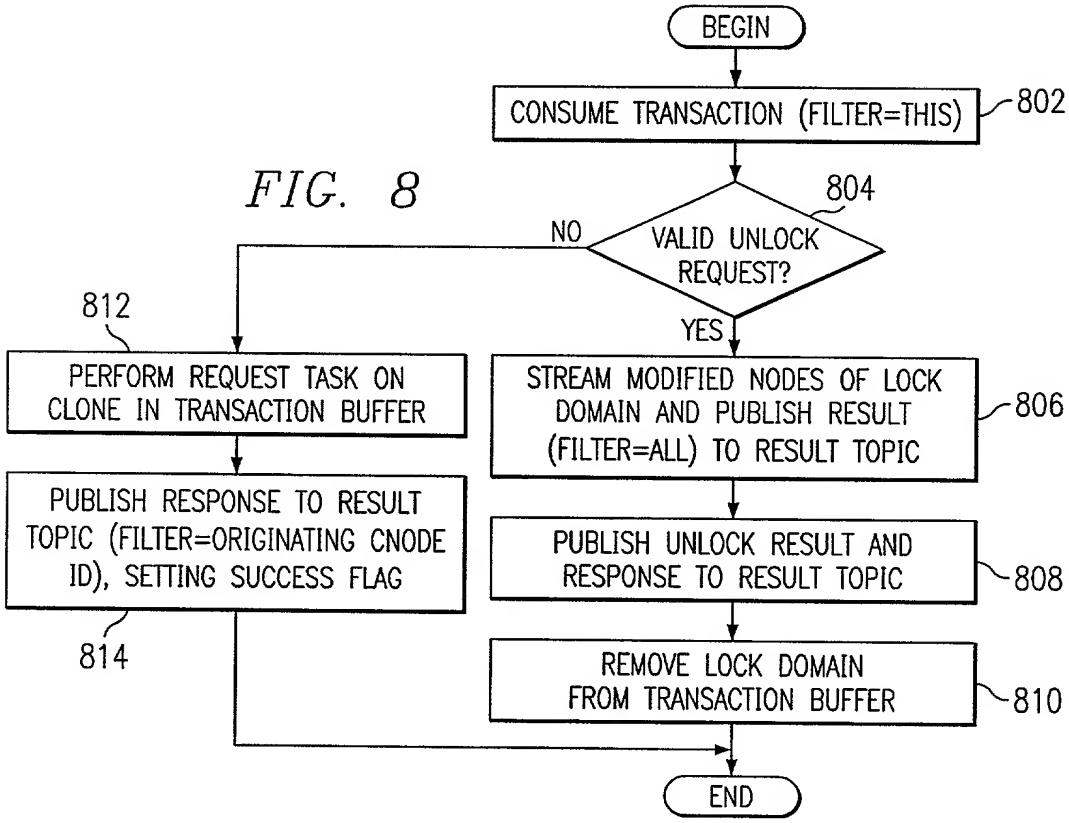
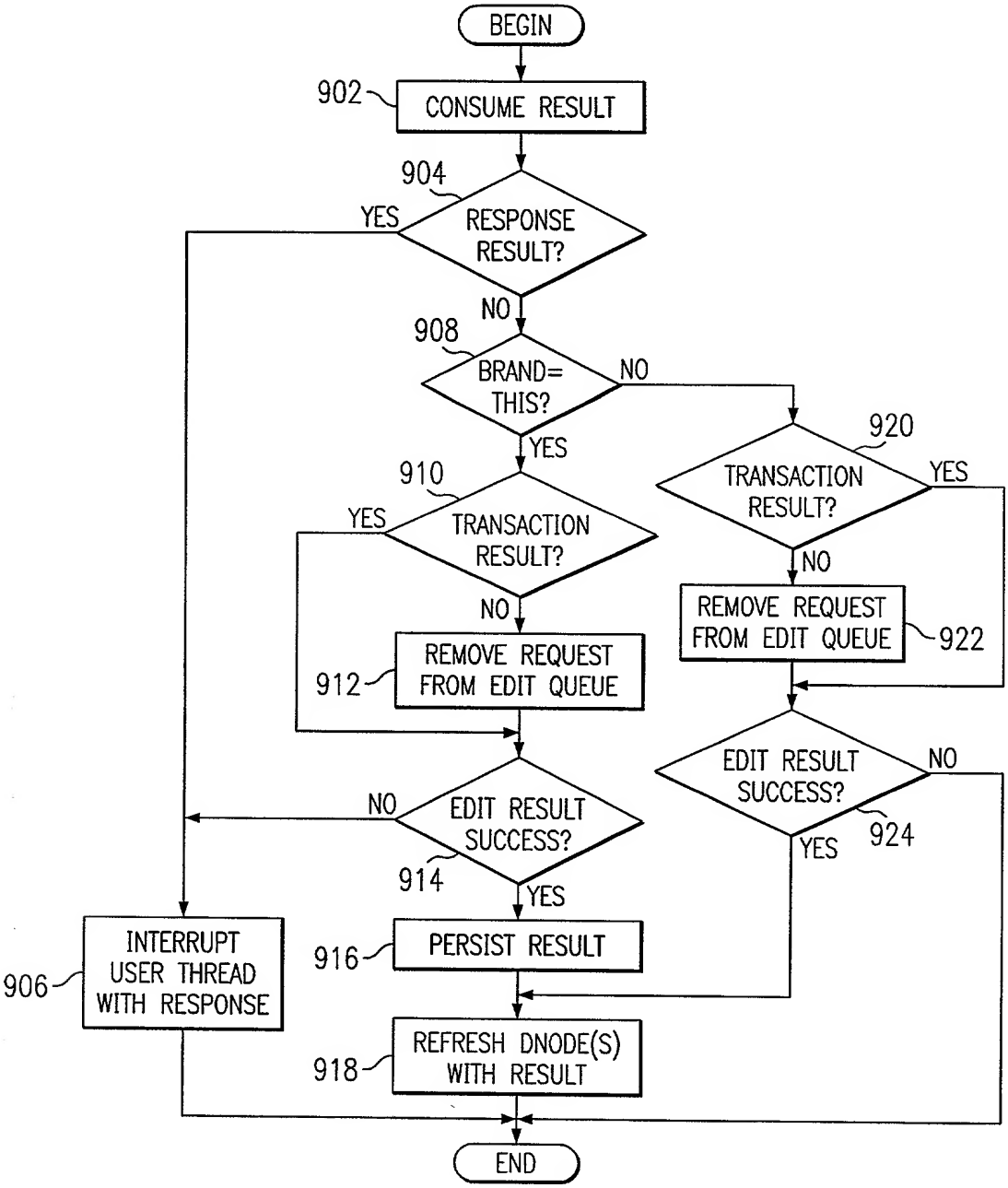

BEGIN
CONSUME TRANSACTION (FILTER=THIS)
802
804
VALID UNLOCK REQUEST?
NO
YES
812
PERFORM REQUEST TASK ON CLONE IN TRANSACTION BUFFER
PUBLISH RESPONSE TO RESULT TOPIC (FILTER=ORIGINATING CNODE ID), SETTING SUCCESS FLAG
814
STREAM MODIFIED NODES OF LOCK DOMAIN AND PUBLISH RESULT (FILTER=ALL) TO RESULT TOPIC
806
PUBLISH UNLOCK RESULT AND RESPONSE TO RESULT TOPIC
808
REMOVE LOCK DOMAIN FROM TRANSACTION BUFFER
810
END

FIG. 8

FIG. 9


BEGIN
902
CONSUME RESULT
904
RESPONSE RESULT?
YES
NO
908
BRAND= THIS?
NO
YES
910
TRANSACTION RESULT?
YES
NO
912
REMOVE REQUEST FROM EDIT QUEUE
920
TRANSACTION RESULT?
YES
NO
REMOVE REQUEST FROM EDIT QUEUE
922
EDIT RESULT SUCCESS?
NO
924
YES
NO
EDIT RESULT SUCCESS?
914
YES
INTERRUPT USER THREAD WITH RESPONSE
906
916
PERSIST RESULT
REFRESH DNODE(S) WITH RESULT
918
END